IN THE UNITED STATES

PATENT AND TRADEMARK OFFICE

APPLICANTS:	William M. Cullen, David A. Chappell
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TITLE:	Message Handling
EXAMINER:	Dhairya A. Patel
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Dated: February 19, 2010 By: /Greg T. Sueoka/
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Reply Brief

Sir/Madam:

This reply brief is filed responsive to the Examiner's Answer dated December 22, 2009 ("the Answer").

MPEP § 1208

This reply brief does not include any new or non-admitted amendment, or any new or non-admitted affidavit or other evidence. Accordingly, the Board is respectfully requested to consider the following remarks for the reasons indicated at MPEP § 1208.

Summary of Rejections to be Reviewed on Appeal

Whether claims 1, 3, 7-12, 16, 17, 20-25 and 28-31 are properly rejected under 35 U.S.C. § 103(a) as unpatentable over U.S. Patent No. 6,397,352 ("Chandrasekaran") in view of U.S. Patent No. 5,596,720 ("Hamada"), in further view of U.S. Patent No. 5,850,525 ("Kalkunte").

Remarks

Appellants' claim 1 recites, in part:

> determining whether a message has been delivered;
> if the message has been delivered, removing the message from the non-persistent storage;
> after a configurable delay interval has elapsed and if the message has not been removed from the non-persistent storage, saving the message to persistent storage so that the message can be retrieved and delivered.

The cited references do not disclose or suggest, among other things, the above-quoted elements of claim 1. Specifically, the cited references do not disclose or suggest "determining whether a message has been delivered" and removing the message from non-persistent storage "if the message has been delivered" as recited by claim 1. On page 20 of the Answer, the Examiner argues that Chandrasekaran discloses these limitations at column 10, lines 58 through column 11, line 2. Respectfully, this is incorrect. This portion of the reference describes:

> At step **312**, the message, the assigned propagation sequence number and information that identifies source site as the propagating site, are sent to the destination site. For example, as indicated by state "3A", as part of TX_1, the message for entry **216** and the propagation sequence number value of "4573" is transmitted from source site **200** to destination site **202**.
>
> At block **320** a second transaction ("TX_2") is initiated at the source site for storing the propagated message information in nonvolatile memory. The second transaction is performed as a separate transaction to durably store the fact that the message has been sent to the destination site.

At most this portion of the reference describes sending a message from a source site to a destination site (step 312) and then storing the message in a message queue (step 320). However, there is no disclosure or suggestion of "determining whether a message has been delivered" and removing the message from non-persistent storage "if the message has been delivered" as recited by claim 1.

On page 21 of the Answer the Examiner argues that Chandrasekaran discloses the above quoted features at column 12, lines 24-31. Specifically, the Examiner argues:

> Furthermore, in column 12 lines 24-31, Chandrasekaran teaches after the receiving message A at the destination site (this means that the message has been delivered) which is sent from the source site, message A will be dequeued from the received message queue (i.e. non-persistent storage). Chandrasekaran specifically states receiving message "A", and then dequeing message "A" from message queue at the source site. The message queue is non-persistent storage. Appellant states requirement for removing the message in Chandrasekaran is completely different from the present invention. Examiner respectfully disagrees and would like to point out that claim language states "if

the message has been delivered", Chandrasekaran in column 12 lines 24-25 states receiving message "A" at the destination site" and then claim language states "removing the message from the non-persistent storage". Chandrasekaran teaches dequeuing the message after it has been delivered from the received message queue at the source site which means the message is removed from the non-persistent storage after it has been delivered. The removing of the message step is conducting after the message has been received/delivered in Chandrasekaran.

In other words, the Examiner is arguing that Chandrasekaran's column 12, lines 24-31 discloses "determining whether a message has been delivered" and removing the message from non-persistent storage "*if the message has been delivered*" as recited by claim 1. Respectfully, this is incorrect. This portion of the reference describes:

> For example, if destination site **202** determines after receiving message "A" that source site **200** has failed, destination site **202** rolls back TX_3 thus causing message "A" to be dequeued from received message queue **206**. By dequeuing message "A", destination site **202** may continue to execute as if it never received message "A" from source site **200**, as it is guaranteed that message "A" will be retransmitted upon the recovery of source site **200**.

Chandrasekaran at most describes a destination site receiving a message and removing the message from a message queue *if the destination site determines that the source site has failed*. Chandrasekaran **only** removes a message from the message queue if the source site has failed. This is the exact opposite of the claimed invention. Chandrasekaran does not disclose or suggest removing messages if there is a determination that a message has been delivered, and so, Chandransekaran does not disclose or suggest "determining whether a message has been delivered" and removing the message from non-persistent storage "*if the message has been delivered*" as recited by claim 1.

Accordingly, Chandrasekaran does not disclose or suggest every limitation of Appellants' claim 1, and claim 1 is patentable over Chandrasekaran for at least this reason.

Claim 1 is patentable over Chandrasekaran for additional reasons. For example, Chadrasekaran does not disclose or suggest "saving the message to persistent storage *so that the message can be retrieved and delivered*" as recited by claim 1. On page 25 of the Answer the Examiner argues that Chandrasekaran discloses this limitation at column 7, lines 30-50. The Examiner states:

> Applicant states Chandrasekaran teaches saving propagated message data to the persistent storage. Examiner would like to point out, Although, Chandrasekaran teaches saving propagated message data in the persistent storage, it is used to retrieved and delivered at a later time incase of source site failure (column 7 lines 30-50). Therefore, Chandrasekaran does teach storing message in non-volatile memory so the message can be retrieved and delivered.

Respectfully, the Examiner's characterization of Chandrasekaran is incorrect since the reference does not disclose the ability to retrieve and deliver a message stored in non-volatile memory. The portion of the reference relied on by the Examiner states:

> source site. By maintaining the propagated message data in nonvolatile memory, a recovery mechanism is provided that allows the source site to determine, even after a source site failure, whether a particular message has previously been propagated to the destination site.
>
> Upon receiving the message from the source site, the destination site enqueues the message for execution and stores the propagation sequence number and the identity of the source site ("received message data") in a received message table that is maintained in durable (nonvolatile) memory at the destination site. The information maintained in the received message table provides a mechanism that allows the destination site, even after a destination failure, to determine whether a particular message has previously been received from the source site. After enqueuing the received

Even assuming that Chandrasekaran discloses storing a message in non-volatile memory, the above-quoted portion of the reference at most discloses a mechanism that allows the destination site to determine **whether** a particular message has previously been received from the source site. Contrary to the Examiner's argument, Chandrasekaran does not disclose or suggest an ability to retrieve and deliver messages

stored in volatile memory. Accordingly, Chandrasekaran does not disclose or suggest "saving the message to persistent storage *so that the message can be retrieved and delivered*" as recited by claim 1, and claim 1 is patentable over Chandrasekaran for this additional reason.

Chandrasekaran also does not disclose or suggest "saving the *message* to persistent storage" as recited by claim 1. As noted in the above quoted portion of Chandrasekaran, the reference only discloses storing "propogated message data" in non-volatile memory. Chandrasekaran defines "propagated message data" as being different from a "message." The Examiner is directed to column 7, lines 11-13 for the definition of "message:"

> that is attached to the message data. In this context, the term "message" is used to represent the combination of the message data and its associated header information.

Column 7, lines 30-34 provides the definition of "propagated message data:"

> nation site. The propagation process then stores the propagation sequence number, the UID and an initial propagation state ("propagated message data") into a propagation table that is maintained in durable (nonvolatile) memory at the source site. By maintaining the propagated message data in

Thus, "propagated message data" is defined as metadata, and is **different** from a message. Since Chandrasekaran only stores propagated message data (i.e., metadata) in non-volatile memory, and not messages, Chandrasekaran does not disclose or suggest "saving the *message* to persistent storage" as recited by claim 1. Moreover, since only the metadata is stored, and since metadata data does not have a message body or header, if this metadata is retrieved it cannot be sent as the original message because there is no message body or header.

Accordingly, Chandrasekaran does not disclose or suggest "saving the *message* to persistent storage" as recited by claim 1, and claim 1 is patentable over Chandrasekaran for this additional reason.

Hamada does not remedy the deficiencies of Chandrasekaran. On page 9 of the Appeal Brief filed September 3, 2009 ("Appeal Brief"), Appellants argued that Chandrasekaran cannot be modified by the teachings of Hamada to save messages in

non-volatile memory because such a modification would change Chandrasekaran's principal of operation in violation of MPEP 2143.01. On page 26 of the Answer the Examiner states:

> Appellant's Argument:
>
> Hamada does not disclose and Hamada cannot be impermissibly modified to disclose "if the message has not been removed from the non-persistent storage, saving the message to persistent storage so that the message can be retrieved and delivered".
>
> Examiner's Response:
>
> As per remark C, Examiner respectfully disagrees w/ the applicant because in column 17 lines 35-65, Hamada teaches saving the message to the persistent storage so that message can be retrieved and delivered (Fig. 21 element 101-5, 201-5)(column 17 lines 35-65)(Fig. 23). Hamada specifically

The Examiner goes on to argue that Hamada discloses the above-quoted elements. However, the Examiner has misstated Appellants' argument since Appellants did not argue that Hamada cannot be modified. The Examiner is directed to Appellants' arguments on page 9 of the Appeal Brief:

> Additionally, Chandrasekaran cannot be modified to save the message in non-volatile memory because such a modification changes the principal operation of Chandrasekaran. MPEP 2143.01. The principal operation of Chandrasekaran is to reduce inefficiencies involved with creating and maintaining appropriate accurate metadata. *See* Chandrasekaran, 4:13-4:643 (impossible to generate a sequence number for the message atomically; using exclusive locks and shared locks still not enough to solve this problem). To avoid these inefficiencies, Chandrasekaran maintains selective metadata in non-volatile memory and updates the metadata at appropriate times. Saving the message to non-volatile memory in addition to the metadata introduces additional inefficiencies involved with maintaining locks on the message. Because saving message to non-volatile memory introduces additional inefficiencies instead of reducing them, saving the message to non-volatile memory impermissibly changes the principal operation of Chandrasekaran.

Appellants therefore argued that Chandrasekaran cannot be modified by the teachings of Hamada since doing so would change the principle of operation in Chandrasekaran. Nothing in the Examiner's answer addresses this argument. Accordingly, Hamada does not remedy the deficiencies of Chandrasekaran, and claim 1 is patentable over the cited references for this additional reason.

Kalkunte does not remedy the deficiencies of Chandrasekaran and Hamada. Accordingly, the cited references, whether taken alone or in combination, do not disclose or suggest every limitation of claim 1. Claim 1 is therefore patentable over the cited references. Independent claims 13, 16 and 24 are patentable over the cited references for at least the same reasons as claim 1. The dependent claims not mentioned above incorporate the limitations of independent claims 1, 13, 16 or 24, and are patentable over the cited references for at least the same reasons as their base claim.

Conclusion

The arguments presented herein demonstrate that claims 1 and 3-31 are patentable over the cited references. The Examiner has had ample opportunity to show the unpatentability of claims 1 and 3-31 but has failed to do so. Accordingly, Appellants respectfully request that the Board reverse the Examiner's rejections and allow claims 1 and 31.

Respectfully submitted,
WILLIAM CULLEN, ET AL.

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